Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Claims Listing

1. (currently amended) A method for inducing melanogenesis in a human subject having ~~an~~ a melanocortin 1 receptors (MC1R) ~~MC1R~~ variant allele associated with loss of or diminished receptor function, which comprises the ~~steps~~ step of administering to said subject an amount of ~~an α-MSH analogue~~ [Nle^4, DPhe^7]-α-melanocyte stimulating hormone ([Nle^4, DPhe^7]-αMSH) effective to induce melanogenesis by the melanocytes in the skin or other epidermal tissue of the subject; wherein the MC1R variant is identified using primer sequences selected from 5'-tggacaggactatggctgtg-3' (MC1R-1F – SEQ ID NO:1), 5'-tcttcagcacgctcttcat-3' (MC1R-1R – SEQ ID NO: 2), 5'-cttctacgcactgcgctacc-3' (MC1R-2F – SEQ ID NO: 3) and 5'-gctttaagtgtgctgggcag-3' (MC1R-2R – SEQ ID NO: 4).

2. (currently amended) The method of claim 1, wherein an admixture of said α-MSH analogue with a further α-MSH analogue is administered in an amount effective to induce said melanogenesis, wherein said further α-MSH analogue is selected from:

(a) compounds of the formula:

Ac-Ser-Tyr-Ser-M-Gln-His-D-Phe-Arg-Trp-Gly-Lys-Pro-Val-NH_2

wherein M is Met, Nle or Lys; and

(b) compounds of the formula:

R_1-W-X-Y-Z-R_2

wherein

R_1 is Ac-Gly-, Ac-Met-Glu, Ac-Nle-Glu-, or Ac-Tyr-Glu-;

W is -His- or -D-His-;

X is -Phe-, -D-Phe-, -Tyr-, -D-Tyr-, or -(pNO_2)D-Phe^7-;

Y is -Arg- or -D-Arg-;

Z is -Trp- or-D-Trp-; and

R_2 is $-NH_2$; -Gly-NH2; or -Gly-Lys-NH_2.

3. (withdrawn, currently amended) The method of claim 1, wherein the further α-MSH analogue is a cyclic analogue wherein an intramolecular interaction exists (1) between the amino acid residue at position 4 and an amino acid residue at position 10 or 11, and/or (2) between the amino acid residue at position 5 and the amino acid residue at position 10 or 11.

4. (withdrawn, original) The method of claim 3, wherein the intramolecular interaction is a disulfide bond or other covalent bond.

5. (currently amended) The method of claim 1, wherein the further α-MSH analogue is selected from the group consisting of:

Ac-Ser-Tyr-Ser-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH_2

Ac-Ser-Tyr-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH_2

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH_2

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH_2

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Gly-NH_2

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-NH_2

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH_2

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Orn-NH_2

Ac-Nle-Asp-His-D-Phe-Arg-Trp-Orn-NH_2

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Dab-NH_2

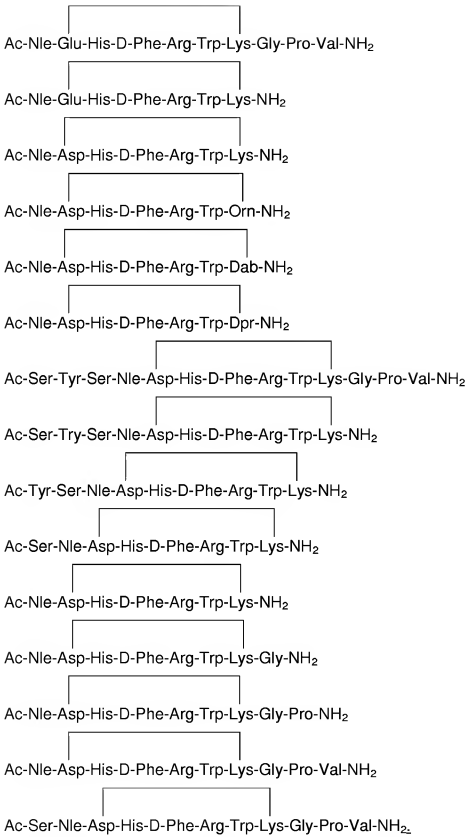
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Dab-NH_2

Ac-Nle-Glu-His-D-Phe-Arg-Trp-Dpr-NH_2

Ac-Nle-Glu-His-Phe-Arg-Trp-Lys-NH_2 (SEQ ID NO:5)

Ac-Nle-Asp-His-Phe-Arg-Trp-Lys-NH_2 (SEQ ID NO:6).

6. (withdrawn, currently amended) The method of claim 1, wherein the further α-MSH analogue is selected from the group consisting of:


Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH2
Ac-Nle-Glu-His-D-Phe-Arg-Trp-Lys-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Orn-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Dab-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Dpr-NH2
Ac-Ser-Tyr-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH2
Ac-Ser-Try-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH2
Ac-Tyr-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH2
Ac-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-NH2
Ac-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH2
Ac-Ser-Nle-Asp-His-D-Phe-Arg-Trp-Lys-Gly-Pro-Val-NH2.

7. (currently amended) The method of claim 1, wherein the further α-MSH analogue is

[D-Phe^7]-α-MSH,
[Nle^4, D-Phe^7]-α-MSH,
[D-Ser^1, D-Phe^7]-α-MSH,
[D-Tyr^2, D-Phe^7]-α-MSH,
[D-Ser^3, D-Phe^7]-α-MSH,
[D-Met^4, D-Phe^7]-α-MSH,
[D-Glu^5, D-Phe^7]-α-MSH,
[D-His^6, D-Phe^7]-α-MSH,
[D-Phe^7, D-Arg^8]-α-MSH,
[D-Phe^7, D-Trp^9]-α-MSH,
[D-Phe^7, D-Lys^{11}]-α-MSH,
[D-Phe^7, D-Pro^{12}]-α-MSH,
[D-Phe^7, D-Val^{13}]-α-MSH,
[D-Ser^1, Nle^4, D-Phe^7]-α-MSH,
[D-Tyr^2, Nle^4, D-Phe^7]-α-MSH,
[D-Ser^3, Nle^4, D-Phe^7]-α-MSH,
[Nle^4, D-Glu^5, D-Phe^7]-α-MSH,
[Nle^4, D-His^6, D-Phe^7]-α-MSH,
[Nle^4, D-Phe^7, D-Arg^8]-α-MSH,
[Nle^4, D-Phe^7, D-Trp^9]-α-MSH,
[Nle^4, D-Phe^7, ~~D-LYS^{11}~~ D-Lys^{11}]-α-MSH,
[Nle^4, D-Phe^7, D-Pro^{12}]-α-MSH,
[Nle^4, D-Phe^7, D-Val^{13}]-α-MSH,

[Cys^4, Cys^{10}]-α-MSH,

[Cys^4, D-Phe^7, Cys^{10}]-α-MSH,

[Cys^4, Cys^{11}]-α-MSH,

[Cys^5, Cys^{10}]-α-MSH,

[Cys^5, Cys^{11}]-α-MSH,

[Cys^4, Cys^{10}]-α-MSH$_{4-13}$,

[Cys^4, Cys^{10}]-α-MSH$_{4-12}$,
[Nle^4, D-Phe^7]-α-MSH$_{4-10}$,
[Nle^4, D-Phe^7]-α-MSH$_{4-11}$,
[D-Phe^7]-α-MSH$_{5-11}$,
[Nle^4, D-Tyr^7]-α-MSH$_{4-11}$,
[(pNO$_2$)D-Phe^7]-α-MSH$_{4-11}$,
[Tyr^4, D-Phe^7]-α-MSH$_{4-10}$,
[Tyr^4, D-Phe^7]-α-MSH$_{4-11}$,
[Nle^4]-α-MSH$_{4-11}$,
[Nle^4, (pNO$_2$)D-Phe^7]-α-MSH$_{4-11}$,
[Nle^4, D-His^6]-α-MSH$_{4-11}$,
[Nle^4, D-His^6, D-Phe^7]-α-MSH$_{4-11}$,
[Nle^4, D-Arg^8]-α-MSH$_{4-11}$,
[Nle^4, D-Trp^9]-α-MSH$_{4-11}$,
[Nle^4, D-Phe^7, D-Trp^9]-α-MSH$_{4-11}$,
[Nle^4, D-Phe^7]-α-MSH$_{4-9}$, or
[Nle^4, D-Phe^7, D-Trp^9]-α-MSH$_{4-9}$.

8. (currently amended) The method of claim 1, wherein the <u>further</u> α-MSH analogue is

[Nle^4, $D\text{-}Phe^7$]-α- $MSH_{4\text{-}10}$,
[Nle^4, $D\text{-}Phe^7$]-α-$MSH_{4\text{-}11}$,
[Nle^4, $D\text{-}Phe^7$], $D\text{-}Trp^9$]-α-$MSH_{4\text{-}11}$, or
[Nle^4, $D\text{-}Phe^7$]-α-$MSH_{4\text{-}9}$.

9-11. (cancelled.)

12. (currently amended) A method according to claim 1 wherein the human subject has one or more variant alleles selected from the group consisting of Val60Leu (V60L), Asp84Glu (D84E), Val92Met (V92M), Arg142His (R142H), Arg 151Cys (R151C), Arg160Trp (R160W), and ~~Asp194His~~ Asp294His (D294H).

13. (currently amended) A method according to claim 1 wherein the human subject has two or more variant alleles selected from the group consisting of Val60Leu (V60L), Asp84Glu (D84E), Val92Met (V92M), Arg142His (R142H), Arg 151Cys (R151C), Arg160Trp (R160W), and ~~Asp194His~~ Asp294His (D294H).

14. (previously presented) A method according to claim 1 wherein the human subject has a Fitzpatrick skin type of I or II.

15. (cancelled)